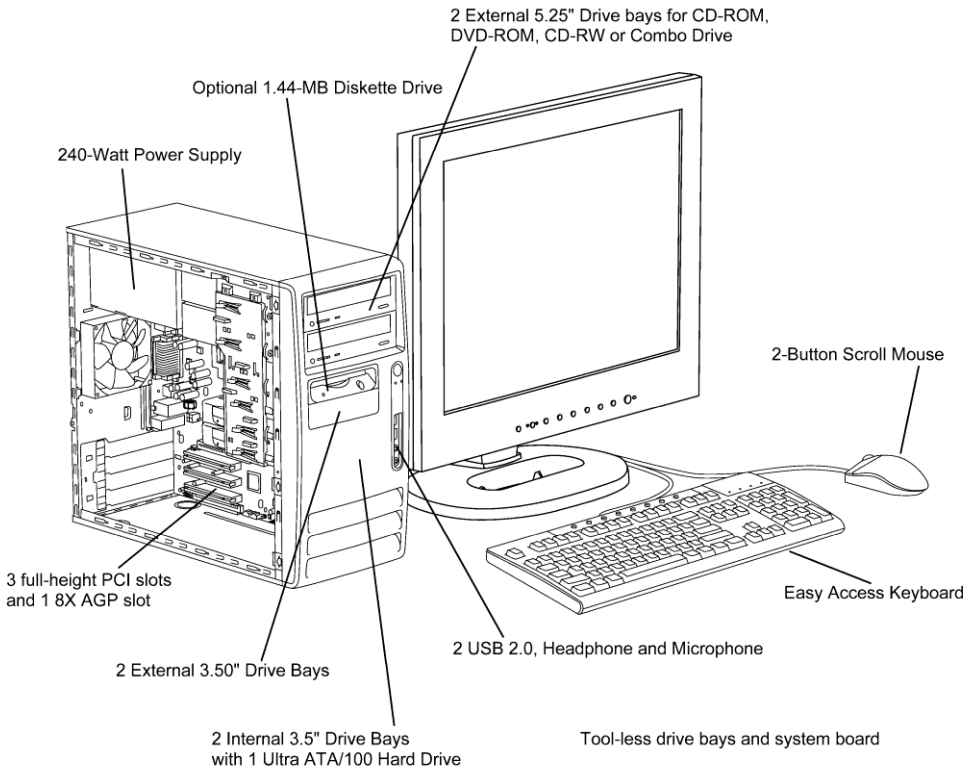
Overview

At A Glance

- AMD Athlon™ XP processors
- NVIDIA nForce2 GT chipset with Integrated 64-MB NVIDIA GeForce4 MX Graphics
- Integrated dual-monitor VGA connections built in with NVIDIA nView Multi-display software standard
- Supports up to 2-GB of PC 2700 (DDR 333) Synch DRAM Memory
- Dual channel memory support
- 4 rear USB 2.0 ports and 2 front USB 2.0 ports
- Integrated audio with internal speaker
- Integrated 3COM 10/100 NICLOM (Lan on Motherboard)
- 8X AGP slot
- Energy Star compliant with energy-saving features
- Protected by HP Services. Terms and conditions vary by country. Certain restrictions and exclusions apply.

Microtower

36.8 x 17.5 x 41.4 centimeters / 14.5 x 6.88 x 16.31 inches


2 External 5.25" Drive bays for CD-ROM, DVD-ROM, CD-RW or Combo Drive
Optional 1.44-MB Diskette Drive
240-Watt Power Supply
2-Button Scroll Mouse
3 full-height PCI slots and 1 8X AGP slot
Easy Access Keyboard
2 USB 2.0, Headphone and Microphone
2 External 3.50" Drive Bays
2 Internal 3.5" Drive Bays with 1 Ultra ATA/100 Hard Drive
Tool-less drive bays and system board

Monitor Sold Separately

Standard Features – Select Models (localized by Regions)

Model Key
Example:

Pre-Configured Models

Standard Features – Custom Components

Processor and Speed – One of the following	**AMD Athlon Processors**	**Front Side Bus**	**Standard L2 Cache**
	AMD Athlon XP 2600+ (2.13-GHz)	266-MHz	256-KB ECC
	AMD Athlon XP 2400+ (2.00-GHz)	266-MHz	256-KB ECC
	AMD Athlon XP 2200+ (1.80-GHz)	266-MHz	256-KB ECC
	AMD Athlon XP 2800+ (2.08-GHz)	333-MHz	512-KB ECC
	AMD Athlon XP 3000+ (2.17-GHz)	333-MHz	512-KB ECC
Hard Drives	40-GB 7200 rpm SMART III Ultra ATA/100		
	40-GB 5400 rpm SMART III Ultra ATA/100		
	80-GB 7200 rpm SMART III Ultra ATA/100		
	80-GB 5400 rpm SMART III Ultra ATA/100		
Standard Memory - One of the following	128-MB DDR Synch DRAM PC2100 (266-MHz) Non ECC (1 x 128 DIMM)		
	256-MB DDR Synch DRAM PC2100 (266-MHz) Non ECC (1 x 256 DIMM)		
	512-MB DDR Synch DRAM PC2100 (266-MHz) Non ECC (1 x 512 DIMM)		
	128-MB DDR Synch DRAM PC2700 (333-MHz) Non ECC (1 x 128 DIMM)		
	256-MB DDR Synch DRAM PC2700 (333-MHz) Non ECC (1 x 256 DIMM)		
	256-MB DDR Synch DRAM PC2700 (333-MHz) Non ECC (2 x 128 DIMM)		
	512-MB DDR Synch DRAM PC2700 (333-MHz) Non ECC (1 x 512 DIMM)		
	512-MB DDR Synch DRAM PC2700 (333-MHz) Non ECC (2 x 256 DIMM)		
	1-GB DDR Synch DRAM PC2700 (333-MHz) Non ECC (2 x 512 DIMM)		
Removable Storage	Optional 1.44-MB Diskette Drive		
	Zip 250 Drive (available in 3.5" and 5.25")		
	64-MB, or 128-MB Drive Keys		
Optical Storage - One of the following	48X Max CD-ROM Drive		
	52X Max CD-ROM Drive (Asia only)		
	48X/24X/48X CD-RW Drive		
	16X/40X DVD-ROM with +R Read		
	NOTE: All DVD devices will be restricted to 256-MB or more system memory.		
Keyboard	PS/2 Easy Access Keyboard		
Mouse	PS/2 2-Button Scroll Mouse		
	USB Optical Scroll Mouse		
Modem	Lucent V.90 56K Win Modem		
Audio	Integrated Soundmax AC97 audio with premium internal speaker		
NIC	Integrated 3Com 3C920B-EMB Fast Ethernet Controller		
	Intel Pro 1000 MT NIC FH PCI adapter		
	HP Gigabit by Broadcom Full Height PCI management adapter		
Graphics	NVIDIA nForce2 GT chipset with Integrated NVIDIA GeForce4 MX 64-MB Graphics		
	NVIDIA Quadro4 100nvs 32MB DDR FH AGP dual head VGA		
	NVIDIA GeForce4 MX-440-8 64MB DDR FH 8X AGP VGA w/TV-out		

Standard Features – Custom Components

Operating System – One of the following	Microsoft Windows XP Home SP1
	Microsoft Windows 2000 SP3
	Microsoft Windows XP Professional SP1
	Mandrake Linux 9.1 (only available in selected languages)
	NOTE: Mandrake Linux 9.1 not available with dual optical storage device configurations, the Quadro4 100nvs graphics cards, Zip drives, wireless keyboards, or wireless mice.
Software (Microsoft Windows system only)	Norton AntiVirus 2003
	Microsoft Works 2003 (US only)
	Microsoft Office XP Small Business Edition (select languages)
	Microsoft Office XP Professional (select languages)
	Roxio EZ CD Creator 5.3 (included with all re-writeable optical drives)
	CorelWordPerfect (US English only) (on CD)
	Intervideo WinDVD (included with all DVD drives)
	MyDVD Suite (included on CD with all DVD +R/+RW drives)
	HP Restore Plus! Kit / OS CD
	Dantz Restrospect Backup (included on CD with all re-writeable optical drives)
	Open Office Productivity Suite on CD (LA only)
Intelligent Manageability	Downloadable from HP Intelligent Manageability at: http://h18000.www1.hp.com/im/

Standard Features – Base Unit Details

Base Unit Contents	Chassis	
	AMD processor, heatsink	
	System board with NVIDIA nForce2 GT chipset	
	(2) ATA Cables	
	Optional diskette drive with cable	
	Audio cable	
	Quick Setup Poster	
	Product Documentation on CD	
	HP OS CD and HP Restore CD	
	Warranty card	
	Power Cord	
	PS/2 Easy Access Keyboard	
	PS/2 Scroll Mouse or USB Optical Mouse (North America)	
Expansion Capability	Memory Expansion Slots (Non-ECC)	2 DIMM slots
	Maximum Memory	2-GB (1-GB per slot maximum)
Slots	PCI	3 full-height, full-length
	AGP	1 full-height, full length 8X AGP
Bays	Internal	Total Bays = 6
	External	(2) 3.5-inch hard drive bays
		(2) full-length 5.25-inch
		(2) full-length 3.5-inch
Wireless Support	PCI card or external USB	
USB Support	(2) Front USB 2.0 Ports	
	(4) Rear USB 2.0 Ports	

NOTE: 2 USB ports can be high-speed, (USB 2.0), and divide the total possible 480Mb/s bandwidth. The remaining 4 ports, if used at the same time, are USB 1.1 and divide up a total of 12Mb/s between them.

Interfaces (Legacy)	Parallel Port	1
	Serial Port	1
	PS/2 Keyboard	1
	PS/2 Mouse	1
	VGA Adapter	2
Chassis Dimensions (H x W x D)	14.5 x 6.88 x 16.31 inches (36.8 x 17.5 x 41.4 cm)	
Chassis Weight	System Weight	23.8 lbs (10.92 kg)
Packaged Unit Dimensions (H x W x D)	23.5 x 13.0 x 23.2 inches (60 x 33.02 x 59 cm)	
Packaged Unit Weight	32.5 lbs (14.71 kg)	

Standard Features – Base Unit Details

System Memory	Type/Speed	DDR Synch DRAM PC2700 (333-MHz) Non-ECC and DDR Synch DRAM PC2100 (266-MHz) Non-ECC
	Maximum Memory	2 GB (1 GB per slot maximum)
	Memory Parity	Not Needed for non-ECC
	ECC Memory	Not Supported by chipset
	Serial Presence Detect Support	Supported
	Dual channel memory Support	Yes. Requires two equal size and type memory modules
Supported Features	Processor	AMD Athlon XP
	CPU Bus Speed Supported	333 or 266-MHz FSB
	Memory Type Supported	DDR (ECC not supported by Chipset)
	Memory Speed Supported	DDR Synch DRAM PC2700 (333 MHz) or PC2100 (266-MHz) Non-ECC
	Serial Presence Detect Support	Yes
	Hard Drive Interfaces Supported	SMART III Ultra ATA/100/66/33
	Hard Drive Controller (PCI) Supported	SMART III Ultra ATA/100/66/33
AMD Athlon XP	Coprocessor	Integrated
	CPU Socket Type/Number	Socket A
	CPU Package	FC-PGA
	Front Side Bus Speed	333 or 266-MHz
	Standard L2 Cache	512-KB ECC or 256-KB ECC, depending on processor
	L2 Cache Architecture / Speed	Full core clock speed
	Cache Upgradeable To	Not upgradeable - Integrated into Processor
System Board	Architecture	Athlon XP / PCI / AGP 4X and 8X
	Chipset	NVIDIA nForce2 GT chipset
	I/O Controller	SMSC LPC47B367 Super I/O
	System Board Form Factor	Standard uATX
	Processor Socket - 462 Pin ZIF	Yes
	DIMM Connectors (2.5V)	Yes (2)
	AGP Connector (1.5V)	Yes (1) 8X AGP
	Integrated AGP Graphics	Yes
	PCI Connectors	Yes (3 on system board)
	Flash ROM	Yes
	Audio	Yes
	CD ROM IN (Audio)	Yes
	Clear CMOS	Yes
	CPU Fan Header	Yes
	Chassis Fan Header	Yes
	Chassis Speaker Header	Yes
	CMOS Battery Holder - Lithium	Yes
	Hood Lock Header	Yes
	Hood Sense Header	Yes
	Multibay Header	No
	Multport Header	No
	NIC supported features:	
	WOL (Wake-On-Lan®)	Yes
	AOL (Alert-On-LAN®)	No
	SOS - Network based alerting	Available in June, 2003
	ASF (Alert Standards Format)	No
	PXE (Pre-Boot Execution Environment)	Yes

Standard Features – Base Unit Details

System Board *(continued)*	Power Supply Header	Yes	
	Power Switch, Power LED & Hard Drive LED Header	Yes	
	Password Clear Header	Yes	
	Riser Connector	No	
	SCSI LED Header	No	
	ACPI-Ready Hardware	• Advanced Configuration and Power Management Interface (ACPI). • It allows the system to wake from a low power mode. • It controls system power consumption, making it possible to place individual cards and peripherals in a low-power or powered-off state without affecting other elements of the system	Yes
	Dual-State Power Button	Power button acts as both an on/off button and suspend-to-sleep button	Yes
Chassis	Color	Carbonite/Silver	
	System Board Form Factors Supported	Standard uATX	
	Cooling Solutions Supported		
	Power Supply Fan (Variable Speed)	Yes	
	Processor Fan-Heatsink (Variable Speed)	Yes	
	Chassis Fan	Yes	
	Front I/O	Standard Front Headphone, Microphone, and (2) USB 2.0	
	Rear I/O	Standard ATX I/O Connectors (4 USB 2.0, 1 VGA, 1 Audio Out, 1 Audio In, 1 Microphone, 1 Serial, 1 Parallel, 2 PS2, 1 RJ45)	
	Internal Speaker	Yes	
	Security Locks Supported	Kensington Cable Lock (optional)	
		Hood Cover Security Loop (standard but Lock not included)	
		Solenoid Hood lock (optional)	
Interfaces	I/O Chip	SMSC LPC47B367 Super I/O	
	Serial Port / UART Type	One Serial Port	
	Parallel Port	One Parallel Port	
	USB	6 USB 2.0 ports (4 rear/2 front)	
	Infrared Port	No	
	Network	RJ-45	
	Keyboard	Yes (PS2 and USB)	
	Mouse	Yes (PS2 and USB)	
	Multibay	No	
	Video	Yes	
	Audio	Yes	

Standard Features – Base Unit Details

Power Supply	Power Supply	240-watt ATX power supply – PFC 115v/230v line switch
	Full Ranging Input (No Line Select Switch)	No
	Active Power Factor Correction (APFC) (Input Current is nearly 1/2 a non-APFC PS)	No
	Passive Power Factor Correction (PFC)	Yes (with line switch set to 230V - No PFC in 115V line switch position)
	Operating Voltage Range	90 to 132VAC, or 180 to 264VAC
	Rated Voltage Range	100 to 127VAC, or 200 to 240VAC
	Rated Line Frequency	50-60 Hz
	Operating Line Frequency Range	47-63 Hz
	Rated Input Current	6A @ 100VAC/3A @ 200VAC
	Maximum Rated Power	240 watt
	Heat Dissipation	Max (369W input): 1260 BTU/hr Typical (75W input): 256 BTU/hr Max (369W input): 317 kg-cal/hr Typical (75W input): 65 kg-cal/hr
	PS Fan	92mm fan integrated in power supply - variable speed for optimum acoustics
	Processor Fan	Variable speed fan
Environmental and Mechanical Engineering Support Center	http://env-webserver.ccm.cpqcorp.net/EMESC/default.htm	
Power Conservation 'Energy Saver'	Energy Star Compliant	Yes
	APM 1.2 Support	No
	Screen Blanking	Yes
	Hard Disk 'Idle' Mode	Yes
	System Idle Mode	Yes
	Cache Memory Power-Down	No
	Blue Angel Compliant (<5w in S5--Power Off)	Yes
	Power Consumption in ES Mode - Suspend to RAM (S3) (Instantly Available PC)	~2W
	Processor/Cache Memory Power-Down (S3)	Yes
	CD-Rom Spins Down when not in use	Yes
Supported Operating System	DOS	No
	Windows 3.1	No
	Windows 95	No
	Windows 98	No
	Windows NT 4.X	No
	Windows 2000 / Windows XP Pro dual-install	No
	Windows 2000	Yes
	Windows XP Pro	Yes
	Windows XP Home	Yes
	Mandrake Linux 9.1	Yes

Standard Features – Base Unit Details

Intelligent Manageability	Intelligent Manageability Home Page	http://h18000.www1.hp.com/im/
	Insight Management Agent	Yes (via web download)
	Plug and Play Ready	Yes
	Windows 2000	Yes
	Windows XP Pro	Yes
	Windows XP Home	No
	Mandrake Linux 9.1	No
Boot Support	Local Diskette Boot	Yes
	Network Boot	Yes (with PXE supported NICs)

ROM Features	Description	Supported
Instantly Available PC (Suspend to RAM - S3)	Allows for very low power consumption with quick resume time	Yes
ROM Based F10 Setup	Allows for reviewing and customizing BIOS settings	Yes
Replicated Setup	Saves BIOS settings to diskette or USB disk-on-key in human-readable file. Repset.exe utility can then replicate these settings on machines being deployed without entering ROM based F10 Setup	Yes
Remote System Installation via F12 (PXE)	Allows a new or existing system to boot over the network and download software, including the operating system, that is stored on a management server	Yes
Failsafe Boot Block ROM	-----	Yes
Emergency ROM Flash Recovery (BootBlock)	User is alerted with audible tones and keyboard LEDs only	Yes
CMOS Archive and CMOS Restore	By holding the power button down, allows the last known good BIOS settings (from previous restart) to be restored if the system gets into a locked up state after configuration changes are made	Yes
Save and Restore CMOS Setup via Diskette	-----	Yes
Auto Setup when New Hardware Installed	System automatically detects addition of new hardware (e.g. memory, floppy, etc.)	Yes
Serial, Parallel, USB Enable/Disable Port Control	Allows the user to enable or disable serial, parallel or USB ports	Yes
Removable Media Write / Boot Control	Prevents the computer from being booted from removable media on supported devices (and can disable writes to media)	Yes
Remote Boot from Server	Allows a new or existing system to boot over the network and download software, including the operating system, that is stored on a management server	Yes
Network Server Mode	Allows for secured keyboard-less operation on PS/2 devices	Yes
Power-On Password	Prevents an unauthorized person from booting up the computer	Yes
Setup Password	Prevents an unauthorized person from changing the system configuration	Yes
Memory Change Alert (Requires Insight Management Agent)	Alerts management console if memory is removed or changed	Yes
Thermal Alert (Requires Insight Management Agent)	Monitors the temperature within the chassis. There are three operational states that a computer can experience: • NORMAL – operating under under normal temperature ranges • ALERTED – operation when excessive temperatures are detected. Will raise a flag so that appropriate action can be taken to avoid shutdown or provide for a smoother system shutdown • SHUTDOWN – when excessive temperatures are encountered. Will automatically shutdown the computer without warning before hardware component damage occurs	Yes

Standard Features – Base Unit Details

ROM Features *(continued)*	**Description**	**Supported**
Cover Removal Alert (Requires Insight Management Agent for network alerts)	• Assists with asset security and control by notifying the Network Administrator and end user when the cover has been removed without authorization. • Is an electronic switch residing inside the computer which can be set to any one-of-three modes depending on the amount of control desired: – DISABLED - the user/network administrator does not want to be made aware of the computer hood removal – NOTIFY USER – notifies user/network administrator that the hood has been removed, but no action required before re-booting the computer – SETUP PASSWORD – notifies user/network administrator that the hood has been removed and administrator password is required before the computer will continue to boot	Yes
Master Boot Record Security	Allows for detection of changes to MBR and optional restoration, useful in protecting from viruses	Yes
Remote ROM Flash	Provides secure, fail-safe ROM image management from a central network console	Yes
Power Management	-----	Yes
ACPI Ready	-----	Yes
SMBIOS (previously known a DMI)	System Management BIOS, previously known as DMI BIOS, for system management information	Yes
Keyboard-less Operation	The system can be operated without a keyboard	Yes
Remote ROM Flash	Provides secure, fail-safe ROM image management from a central network console	Yes
Remote Wakeup / Remote Shutdown	• Allow a system administrator to power on, restart, and power off a client computer from a remote location. • This enables cost-effective power consumption when the administrator needs to distribute software, perform security management, or update the ROM.	Yes
ROM Based Setup (F10) and Start-up Diagnostics	-----	Yes
System Environmental Specs		
Acoustics: Advanced Power Management – On	Seated operator position	Idle (Hard drive spinning but not seeking) = 28 dBA
Shock		
Operating (*Using 11-ms half-sine shock pulse)	-----	5 G's* (with no damage being incurred)
Non-Operating (*Using 11-ms half-sine shock pulse)	-----	10 G's*, positive and negative directions front to back axis: 20 G's* in all other axes
Vibration		
Operating	-----	Random vibration at 0.000215 G^2/Hz, 10Hz to 300Hz, (0.25G's nominal)
Non-Operating	-----	Random vibration at 0.0005 G^2/Hz, 10Hz to 500Hz, (0.5G's nominal)
Relative Humidity		
Operating (maximum wet bulb temp., non-condensing)	-----	10% to 90% relative humidity (Rh), 28°C
Non-operating (maximum wet bulb temp., non-condensing)	-----	5% to 95% relative humidity (Rh), 38.7°C
Altitude Max (un-pressurized)		
Operating (Maximum allowable altitude change rate is 1500 ft/min.)	-----	0 to 10,000 feet (3,048 meters) – This value may be limited by the type and number of options installed.
Non-operating (Maximum allowable altitude change rate is 1500 ft/min)	-----	0 to 30,000 ft (9,144 m)

Standard Features – Base Unit Details

Initial Configuration and Deployment	Description	Supported
Replicated Setup	Saves BIOS settings to diskette or USB disk-on-key in human-readable file. Repset.exe utility can then replicate these settings on machines being deployed without entering ROM based F10 Setup	Yes
Support Software CD	-----	Yes
HP Software Restore CD	Allows the computer to be restored to its original factory shipping image	Yes
Altiris eXpress Solutions (30-day trial version)	A suite of solutions that focus on business needs in four areas, saving time and freeing resources to address other crucial issues: • Deployment & Migration • Software & Operations Management • Inventory & Asset Management • Help Desk & Problem Resolution	http://h18000.www1.hp.com/im/
PC Transplant Pro (30-day trial version)	Makes transferring the files and settings that make your PC unique – its personality – a quick and intuitive process	
System Software Manager (free)	A utility that automatically detects and updates BIOS, device drivers, and management agent versions on your networked PCs	
Novel ZenWorks 2.0	-----	
Insight Manager	-----	
Insight Management Agent	Provides fault monitoring, alerting, SNMP, DMI, and web agent	
Altiris agent	-----	
HP Management Solutions Partners Program	-----	
Asset Tracking		
Asset Tracking and Security Home Page	-----	http://h18000.www1.hp.com/im/swdeploy/dt_nb.html
Asset Tag	• Intended to be used as a repository for storing company-specific property asset numbers for easy tracking • Initially set equal to the system serial number • Stored in a protected section of non-volatile memory which can be accessed and modified with the F10 Setup program	Yes
DIMM Serial Presence Detect	Detects whether or not memory DIMMs are present and their type	Yes
Hard drive serial number, model, and manufacturer	Hard drive manufacturer, model, and serial number is stored in the hard drive firmware and reported in ROM based F10 setup	Yes
Monitor serial number, model & manufacturer		Yes
System serial number, model, & manufacturer	System serial number, model, & manufacturer stored in a non-volatile memory and can be retrieved with management software or viewed in ROM based F10 setup	Yes
ROM revision levels	• System ROM revision levels are identified by a version number (xx.yy) and reported in ROM based F10 Setup • Version is stored in an industry standard memory location (SMBIOS) so that management SW applications can use and report this information	Yes
System board revision level	• Allows management SW to read the revision level of the system board • Revision level is digitally encoded into the hardware and cannot be modified	Yes
Memory Change Alert (Intelligent Manageability needed to work)	Alerts management console if memory is removed or changed	Yes
Ownership Tag	A user defined string stored in a non-volatile memory that is displayed on the BIOS splash screen	Yes

Standard Features – Base Unit Details

Security Features of Chassis	Description	Supported
Solenoid Hood Lock	-----	Yes
Hood Sensor	-----	Yes
Kensington Lock Support	-----	Yes
Cable Lock Provision	Allows the user to physically secure computer hardware from theft via a loop on the chassis. With lock installed, this loop also prevents the hood from being removed.	Yes
Serial, Parallel, USB Enable/Disable	Allows the user to enable or disable serial, parallel or USB ports and hide them from the operating system	Yes
Port Control	Device which attaches to back of chassis covering external ports and thereby preventing unauthorized access; also aids in cable management	Yes
Removable Media Write / Boot Control	Prevents the computer from being booted from removable media on supported devices (and can disable writes to media)	Yes
Power-On Password	Prevents an unauthorized person from booting up the computer	Yes
Setup Password	Prevents an unauthorized person from changing the system configuration	Yes
SmartCard Reader	Security device that prevents system access into the operating system unless the user has the appropriate Smartcard	Optional
Fault Notification and Recovery		
Fault Management Home Page	-----	http://h18000.www1.hp.com/im/
SMART Hard Drives, Fault Notification, & Prefailure Warranty	• Allows hard drives to monitor their own health and to raise flags if imminent failures were predicted • Predicts failures before they occur. Tracks fault prediction and failure indication parameters such as re-allocated sector count, spin retry count, calibration retry count • By helping users avoid actual hard drive failures, SMART hard drives act as "insurance" against unplanned user downtime and potential data loss from hard drive failure	Yes
Surge Tolerant Full Ranging Power Supply	Withstands power surges up to 2000V	Yes
Ultra ATA Integrity Monitoring (CRC Checking)	• Provides data transfer verification. • Provides proactive notification of hard drive data transmission problems and recommendations for enhancing system performance • Detects all the following errors types: – single bit errors – double bit errors – an odd number of errors – error bursts up to 32-bits long	Yes
ATA RAID Controller Option	-----	No
System Software Updating		
Support Software CD & website	-----	Yes
Serviceability Features – System		
Dual Color Power LED on Front of Computer	Indicates normal operations and fault conditions	Yes
Blinking Power LED Codes	Allows for easy problem resolution	Yes
Diagnostic LED Explanation Table	Number of 1-second blinks (red LED) Diagnosis – followed by a 2 second pause/ repeat: 2 = Processor Thermal Protection Activated 3 = Processor not installed 4 = Power Supply Failure 5 = Memory Error 6 = Video Error 7 = PCA failure (ROM detected failure prior to video) 8 = Invalid ROM, bootblock recover mode	Yes (Available at http://www.compaq.com/support/techpubs/illustrated_parts_map)
Emergency ROM Flash Recovery	-----	Yes
Compaq Diagnostic for Windows Software	-----	Yes
Compaq Configuration Record Software	-----	Yes

Standard Features – Base Unit Details

Serviceability Features – System *(continued)*	**Description**	**Supported**
Over-Temp Warning on Screen (Requires IM Agents)	-----	Yes
HP OS CD (Restore OS CD)	Allows the computer to be restored to its original factory shipping image	Yes
HP Restore CD (Restores Drivers CD)	Allows the computer to be restored to its original factory shipping image	Yes
Flash ROM	-----	Yes
3.3V Aux Power LED on System PCA	-----	Yes
Dual Function 5V Aux Power LED (ON) / PS_ON LED (OFF) on System PCA	-----	Yes
Diagnostic Power Switch LED on board	-----	Yes (On when power switch pushed)
Clear Password Jumper	-----	Yes
Clear CMOS Button		Yes
CMOS Battery Holder for easy Replacement	-----	Yes
Processor ZIP Socket for easy Upgrade	-----	Yes
DIMM Connectors for easy Upgrade	-----	Yes
NIC LEDs (integrated) (Green & Amber)	Used to determine NIC status	Yes (Green On = Network Activity; Amber On = 100Base-TX; Amber Off = 10Base-TX)
Serviceability Features		
Tool-less PCI Card Removal	-----	Yes
Tool-less AGP Card Removal	-----	Yes
Dual Color Power and Hard Drive LED	Indicates Normal Operations and Fault Conditions	Yes
Diagnostic LED Explanation Table	-----	Yes (Available at http://www.compaq.com/support/techpubs/illustrated_parts_map)
Emergency ROM Flash Recovery	-----	Yes
Smart Cover Sensor (Requires Insight Management Agent for network alerts)	• Assists with asset security and control by notifying the Network Administrator and end user when the cover has been removed without authorization. • Is an electronic switch residing inside the computer which can be set to any one-of-three modes depending on the amount of control desired: – DISABLED - the network administrator does not want to be made aware of the computer hood removal – NOTIFY USER - notifies network administrator that the hood has been removed, but no administrator action required before re-booting the computer – SETUP PASSWORD – notifies network administrator that the hood has been removed and administrator password is required before re-booting the computer	Yes
Solenoid Hood Lock	Remote operated system lock	Yes
Green Pull Tabs, and Quick Release Latches for easy Identification	-----	Yes
System memory can be upgraded without removing the system board or any internal components	Eases memory upgrading	Yes
Tool-less Hood Removal	Eases entry to the chassis without use of special tools	Yes (with captive thumbscrews)
Tool-less Hard Drive, CD & Diskette Removal	-----	Yes
Tool-less System Board Removal	No special tools required for system board removal or maintenance	Yes
Industry-standard CD Bay	-----	Yes

Standard Features – Base Unit Details

Serviceability Features – Hard Drives	Description	Supported
Drive Self Tests (DPS)	• Drive Protection System • A diagnostic hard drive self test. It scans critical physical components and every sector of the hard drive for physical faults and then reports any faults to the user. • Running independently of the operating system, it can be accessed through a Windows-based diagnostics utility or through the computer's setup procedure. It produces an evaluation on whether the hard disk drive is the source of the problem and needs to be replaced. • The system expands on the Self-Monitoring, Analysis, and Reporting Technology (SMART), a continuously running systems diagnostic that alerts the user to certain types of failures	Yes
DPS Access through F10 Setup during Boot		Yes
DPS Access through Diagnostics for Windows		Yes
SMART Technology (Self-Monitoring, Analysis and Reporting Technology)	• Allows hard drives to monitor their own health and to raise flags if imminent failures were predicted • Predicts failures before they occur. Tracks fault prediction and failure indication parameters such as re-allocated sector count, spin retry count, calibration retry count • By helping users avoid actual hard drive failures, SMART hard drives act as "insurance" against unplanned user downtime and potential data loss from hard drive failure	Yes
SMART I - Drive Failure Prediction		Yes
SMART II - Off-Line Data Collection		Yes
SMART III - Off-Line Read Scanning with Defect Reallocation		Yes
Service and Support		
	On-site Warranty and Service Note 1: This three-year, limited warranty and service offering delivers three years of on-site, next business-day Note 2 service for parts and labor and includes free telephone support Note 3 24 x 7. Global coverage Note 2 ensures that any product purchased in one country and transferred to another, non-restricted country will remain fully covered under the original warranty and service offering.	
	NOTE 1: Terms and conditions may vary by country. Certain restrictions and exclusions apply.	
	NOTE 2: On-site service may be provided pursuant to a service contract between HP and an authorized HP third-party provider, and is not available in certain countries. Global service response times are based on commercially reasonable best effort and may vary by country.	
	NOTE 3: Technical telephone support applies only to HP-configured, HP and HP-qualified, third-party hardware and software. Toll-free calling and 24 x 7 support may not be available in some countries.	

After-Market Options

Communications	***Wireless***		
	HP WL215 USB (802.11b)	191810-B22, AE1, 292	DC758A
	HP WL215 USB (802.11b)		DC758B
	HP WL210 PCI (802.11b)	191809-001, 021, 292	DC756A
	802.11 PCI adapter (802.11b) – (full-height and low profile)		DC756B
	Networking		
	Compaq NetExtreme™ 10/100/1000 Management Gb Adapter	266997-B21	
	Intel Pro 1000 MT NIC		DC193A
	HP Gigabit by Broadcom Full Height PCI management adapter		DC195A
	Intel 10/100 S Management Adapter	212953-B21	DC133A
	Intel 10/100 S Management Adapter (20-pack)	212954-B21	DC134A
	V.90 56K PCI Win Modem	239137-xxx	DC131A
	USB 56K Fax Modem	228141-xxx	DC585A
Graphics	***2D Single Head Graphics***		
	NVIDIA GeForce4 MX-440-8 64-MB DDR LP 8X AGP VGA w/TV-out		DC663A
	2D Multi-Display Graphics		
	NVIDIA Quadro4 100NVS 32-MB AGP dualhead with VGA cables		DC665A
Hard Drives and Controllers	***SMART III Ultra ATA/100 Hard Drives with Drive Protection System (DPS)***		
	40-GB 7200 rpm Ultra ATA/100 Hard Drive	201066-B21	DC180A
	80-GB 7200 rpm Ultra ATA/100 Hard Drive	250020-B21	DC181A
	160-GB 7200 rpm Ultra ATA/100 Hard Drive		DC189A
	250-GB 7200 rpm Ultra ATA/100 Hard Drive		DC516A
	Cables		
	2 Device IDE Cable	260626-B1	DC183A
Input/Output Devices	***Keyboards***		
	PS/2 Easy Access Keyboard (carbonite/silver)		DC167B#xxx
	USB Easy Access Keyboard		DC168B#xxx
	Wireless Easy Access Keyboard with Wireless/Optical Mouse		DC170B#xxx
	USB Easy Access SmartCard Keyboard		DC169B#xxx
	Mice		
	PS/2 2-Button Scroll Mouse (carbonite)		DD440B
	USB 2-Button Scroll Mouse (carbonite)		DD441B
	Wireless Optical Mouse (carbonite)		DC210B
	USB 2-Button Optical Scroll Mouse (carbonite)		DC172B
Memory (DIMMs)	***333-MHz (PC2700) DDR DIMMs Non-ECC***		
	1-GB DDR Synch DRAM PC2700 (333-MHz) Non-ECC	313886-292	DC341A
	512-MB DDR Synch DRAM PC2700 (333-MHz) Non-ECC	313885-292	DC340A
	256-MB DDR Synch DRAM PC2700 (333-MHz) Non-ECC	313884-292	DC339A
	128-MB DDR Synch DRAM PC2700 (333-MHz) Non-ECC	313883-292	DC338A
	266-MHz (PC2100) DDR DIMMs Non-ECC		
	1-GB DDR Synch DRAM PC2100 (266-MHz) Non-ECC	313883-292	DC166A
	512-MB DDR Synch DRAM PC2100 (266-MHz) Non-ECC	282435-B21	DC165A
	256-MB DDR Synch DRAM PC2100 (266-MHz) Non-ECC	282434-B21	DC164A
	128-MB DDR Synch DRAM PC2100 (266-MHz) Non-ECC	282433-B21	DC163A

After-Market Options

Monitors

Essential Series	
Compaq S9500 CRT Monitor (19-inch, Carbon/Silver)	261615-xxx
Compaq S7500 CRT Monitor (17-inch, Carbon/Silver)	261606-xxx
Compaq S5500 CRT Monitor (15-inch Carbon/Silver)	261602-xxx
Compaq TFT1501 Flat Panel Monitor (15-inch, Carbon/Silver, North America)	301042-003
Compaq TFT1501 Flat Panel Monitor (15-inch, Carbon/Silver, Outside North America)	P4825D-xxx
Compaq TFT1701 Flat Panel Monitor (17-inch, Carbon/Silver, North America)	292847-003
Compaq TFT1701 Flat Panel Monitor (17-inch, Carbon/Silver, Outside North America)	P9019A-xxx
Advantage Series	
Compaq V7550 CRT Color Monitor (17-inch, Carbon/Silver)	261611-xxx
Compaq TFT1720 Flat Panel Monitor (17-inch, Carbon/Silver, North America)	295926-003
Compaq TFT1720 Flat Panel Monitor (17-inch, Carbon/Silver, outside North America)	D5064D-xxx
Compaq FT1720M Flat Panel Monitor (17-inch, (Carbon/Silver, includes speaker, USB port, headphone, North America)	301958-003
Compaq TFT1720M Flat Panel Monitor (17-inch, (Carbon/Silver, includes speaker, USB port, headphone, outside North America)	D5064P-xxx
Compaq TFT1520 Flat Panel Monitor (17-inch, Carbon/Silver, North America)	295925-003
Compaq TFT1520 Flat Panel Monitor (17-inch, Carbon/Silver, outside North America)	D5063D-xxx
Compaq TFT1520M Flat Panel Monitor (17-inch, (Carbon/Silver includes speaker, USB port, headphone, North America)	301957-003
Compaq TFT1520M Flat Panel Monitor (17-inch, (Carbon/Silver includes speaker, USB port, headphone, outside North America)	D5063P-xxx
Performance Series	
HP P930 CRT Monitor (19-inch, Flat-screen, Carbon/Silver, North America)	302268-003
HP P930 CRT Monitor (19-inch, Flat-screen, Carbon/Silver, Outside North America)	P909W-xxx
HP P1130 CRT Monitor (21-inch, Flat-screen, Carbon/Silver, North America)	30227-003
HP P1130 CRT Monitor (21-inch, Flat-screen, Carbon/Silver, Outside North America)	P4819-xxx
HP L1825 Flat Panel Monitor (18-inch, Carbon/Silver, North America)	303486-003
HP L1825 Flat Panel Monitor (18-inch, Carbon/Silver, Outside North America)	P9021W-xxx
HP L2025 Flat Panel Monitor (20-inch, Carbon/Silver, North America)	303102-003
HP L2025 Flat Panel Monitor (20-inch, Carbon/Silver, Outside North America)	P4831W-xxx

Multimedia

Labtec Spin-22 Speakers (carbon)	246637-001	DC186A
PC Comm Station Pro (speaker, headphone, wireless keyboard and mouse)	302002-xxx	P8815A or P8815B
PC Comm Station (speaker and headphone)	304251-008	P8814A or P8814B

After-Market Options

Optical Drives	***DVD-ROM Drives***		
	16X/40X DVD-ROM with +R Read Drive (carbonite)		DC151B
	CD-ROM Drives		
	48X Max CD-ROM Drive (carbonite)		DC143B
	CD-RW Drives		
	48X/24X/48X CD-RW Drive (carbonite)		DC196B
	DVD+RW Drives		
	4X DVD+R/+RW Drive		DC517B
	Combo Drives		
	48X Combo Drive CD-RW & DVD-ROM (carbonite)		DC197B
Removable Storage	ZIP 250 Drive (carbonite)		DC140B
	ZIP 250 Media 3-Pack	217896-B21	DC138A
	ZIP 750 Drive (carbonite)		DC518B
	ZIP 750 Media 3-Pack		DC519A
	TR5 10/20 GB IDE Tae Drive (carbonite)		DC139B
Security	Identix BioTouch USB Fingerprint ID Device	240238-B21	
	Chassis clamp lock, universal, with cable		DE818A
	Chassis clamp lock, universal, no cable		DE817A
	Kensington Lock	294316-B21	DC368A
	Solenoid Lock	252076-B21	DE618A
PCI Card	Hi Speed USB 2.0 PCI Card (Qualified on the d325 for use in North America only)	287636-B21	287636-B21
	1394 Firewire PCI Card		DE471A
USB Storage Options	16-MB USB Drive Key (Carbonite) "New Disk-On-Key ID"		DC192B
	32-MB USB Disk-On-Key (Carbon)	301993-B21	DC142A
	64-MB USB Disk-On-Key (Carbon)		DC191A
	64-MB USB Drive Key (Carbonite) "New Disk-On-Key ID"		DC191B
	128-MB USB Disk-On-Key (Carbon)		DC190A
	128-MB USB Drive Key (Carbonite) "New Disk-On-Key ID"		DC190B
	1.44-MB USB Floppy Drive - External (Carbon)	304707-B21	DC141A

Memory

NVIDIA nForce2 GT chipset

DDR SYNCH DRAM DIMM NON-ECC MEMORY

The HP business desktop d325 PC has two memory DIMM slots and supports dual channel memory configurations. It is not necessary to add memory in pairs or kits, but for best performance, memory should be added in pairs and should be the same type. For example, 2x128-MB memory modules will perform better on some applications than 1x256-MB memory module because of the dual channel memory support on the d325.

STANDARD MEMORY

Configurations can be selected with a 128-MB, 256-MB, 512-MB, 1024-MB, or 2048-MB memory. Memory types supported include PC2100 (DDR266) and PC2700 (DDR333).

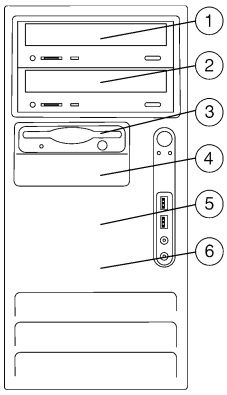
Various combinations of single-DIMM (for future upgradeability) and double-DIMM (for enhanced dual-channel memory performance) will be offered.

Other "mis-matched" memory combinations, such as 384MB (using 1x128-MB and 1x256-MB) will not be offered due to performance limitations of the d325. In these mis-matched configurations, the maximum operation speed is determined by slowest DIMM. After installing a mis-matched configuration, the following message will appear on the screen: "217 Memory DIMM Configuration Warning: Installed memory DIMM configuration is unbalanced. Multiple DIMMs installed of unequalsize. For best performance, use a balanced DIMM configuration."

Memory Configuration	Slot 1	Slot 2
128-MB DDR266	128-MB	Empty
256-MB DDR266	128-MB	128-MB
256-MB DDR266	256-MB	Empty
128-MB DDR333	128-MB	Empty
256-MB DDR333	128-MB	128-MB
256-MB DDR333	256-MB	Empty
512-MB DDR333	256-MB	256-MB
512-MB DDR333	512-MB	Empty

NOTE: It is not necessary to add memory in pairs or kits. Memory upgrades are accomplished by adding single or multiple DIMMs of the same or varied sizes. This chart does not represent all possible memory configurations.

Storage



	Quantity Supported	Position Supported	Controller
MICROTOWER			
Diskette Drives	2	3, 4	Diskette
Tape Drive	2	1, 2	IDE
CD-ROM Drives	2	1, 2	IDE
DVD-ROM Drives	2	1, 2	IDE
CD-RW Drives	2	1, 2	IDE
Combo Drives	2	1, 2	IDE
SMART III Ultra ATA Hard Drives	2	5, 6	Ultra ATA

Technical Specifications – Audio

Integrated ADI 1981A Audio

Type	Integrated	
AC97 Stereo Codec	Yes	
OPL3 FM Synthesis Support	Yes	
Sound Blaster Compatibility	Yes	
Audio Jacks	Mic-In (20-K ohm Input Impedance)	
	Line-In (12-K ohm Input Impedance)	
	Line-Out * (less than 800 ohms Output Impedance, expects at least a 10-K ohm load)	
	Headphone-Out (2.5 Ohms Output Impedance, expects at least a 32 ohm load)	
NOTE: *Internal Speaker Amplifier is for Internal Speaker only. External Speakers need to be powered externally.		
Sampling	7 kHz – 48 kHz	
Compression	ADPCM, ESPCM	
Wavetable Syntheses (software)	Yes	
3D Positional Sound	No	
Analog Audio	**Number of Channels on Line-Out** (mono/stereo)	Stereo (Left & Right channels)
	Internal Audio Speaker Power Rating	3W
	Internal Speaker	Yes
	Internal Tuned Port Speaker	Yes
	Hardware Equalizer for Internal Speaker	5 Band EQ
	External Speaker Jack (Line-Out)	Yes

Technical Specifications – Communications

Integrated 3Com 3C920B-EMB Fast Ethernet Controller	**Manufacturer**	3Com	
	Connector	RJ-45	
	Bus	32-bit PCI	
	Media	10BASE-T/100BASE-TX	
	Management capabilities	ACPI, WOL and DMI 2.0, PXE 2.0, WfM 2.0, SOS alerting	
	Configuration	**Network transfer rate**	10BaseT (half-duplex) 10 Mbps
			10BaseT (full-duplex) 20 Mbps
			100BaseTX (half-duplex) 100 Mbps
			100BaseTX (full-duplex) 200 Mbps
		Data interface	PCI, 32-bit bus mastering
		I/O address	Automatic I/O address
		Interrupt level	Automatic IRQ setup
		Standards compliance	PCI 2.2, PC'99, RWU
		Drivers	Microsoft Windows Me, Microsoft Windows 2000, Microsoft Windows 9x, Microsoft Windows NT, Windows XP, Linux
		Remote wakeup	Yes, PME
		Operating distance	10BASE-T/100BASE-TX up to 100 meters (328 feet)
		Proactive alert technology	No
	Environmental operating requirements	**Temperature**	32° to 131° F (0° to 55° C)
		Humidity (non-condensing)	10% to 90%
		Power management	ACPI
		Network management	Any SNMP management medium including 3Com DynamicAccess® boot services, and 3Com DynamicAccess Managed PC Boot Agent
		Power	+ 3.3 V, 340 mA
		LED indicators	100-Mbps link, 10-Mbps link, activity
		Dimensions	4.7 x 2.2 inches (12.0 x 5.6 cm)

Intel Pro 1000 MT NIC

Connector	RJ-45	
Controller	Intel 82540EM Gigabit Controller	
Memory	Integrated 96Kb frame buffer memory	
Data rates supported	10/100/1000 Mbps	
Compliance	IEEE 802.1A, 802.1P, 802.1P, 802.1Q, 802.2, 802.3, 802.3AB and 802.3u compliant, 802.3x flow control	
Bus architecture	PCI 2.2	
Data path width	32-bit, 33/66 MHz bus interface	
Data transfer mode	Bus-master DMA	
Hardware certifications	FCC, B, CE, TUV- cTUVus Mark Canada and United States, TUV- GS Mark for European Union	
Power requirement	5V_PCI with 4.75V to 5.25V operating range	
Boot ROM support	Yes	
Network transfer rate	10BASE-T (half-duplex) 10 Mbps	
	10BASE-T (full-duplex) 20 Mbps	
	100BASE-TX (half-duplex) 100 Mbps	
	100BASE-TX (full-duplex) 200 Mbps	
	1000BASE-T, 1000 Mbps	
Environmental	Operating temperature	32° to 131°F (0° to 55° C)
	Operating humidity	85% at 131° F (55° C)
Dimensions	4.7 x 4.7 x 0.8 inches (12.1 x 12.1 x 1.9 cm)	
Operating system driver support	Microsoft Windows NT 4.0, Microsoft Windows 98, Microsoft 2000, Microsoft XP, Linux 2.2, Linux 2.4	
Management capabilities	ACPI, WOL and DMI 2.0, PXE 2.0, WfM 2.0, Intel PROset II utility	

Technical Specifications – Communications

Broadcom NetXtreme Gigabit Ethernet	**Connector**	RJ-45	
	Controller	Broadcom 5782 PCI LAN Controller	
	Memory	Integrated 96Kb frame buffer memory	
	Data rates supported	10/100/1000 Mbps	
	Compliance	IEEE 802.1A, 802.1P, 802.1P, 802.1Q, 802.2, 802.3, 802.3AB and 802.3u compliant, 802.3x flow control	
	Bus architecture	PCI 2.2	
	Data path width	32-bit, 33/66 MHz bus interface	
	Data transfer mode	Bus-master DMA	
	Hardware certifications	FCC, B, CE, TUV- cTUVus Mark Canada and United States, TUV- GS Mark for European Union	
	Power requirement	1.48 watts @ +3.3V AUX supply with 5V tolerance	
	Boot ROM support	Yes	
	Network transfer rate	10BASE-T (half-duplex) 10 Mbps	
		10BASE-T (full-duplex) 20 Mbps	
		100BASE-TX (half-duplex) 100 Mbps	
		100BASE-TX (full-duplex) 200 Mbps	
		1000BASE-T, 1000 Mbps	
	Environmental	Operating temperature	32° to 131°F (0° to 55° C)
		Operating humidity	85% at 131° F (55° C)
	Dimensions	4.7 x 2.0 x 0.08 inches (12 x 5 x 1.9 cm)	
	Operating system driver support	Microsoft Windows NT 4.0, Microsoft Windows 98, Microsoft 2000, Microsoft XP, Linux 2.2, Linux 2.4	
	Management capabilities	ACPI, WOL and DMI 2.0, PXE 2.0, WfM 2.0, Broadcom mgmt utility	
	Alerting	ASF 1.0	

Lucent V.90 56K PCI Win Modem

.

Data Transmission	V.90/K56flex technology speeds: 56,000 Kbps maximum downstream data, controllerless
NOTE: 56 Kbps technology refers to download speeds only and requires compatible modems at server sites. Other conditions may limit modem speed. FCC limitations allow a maximum of 53 Kbps during download transmissions	
Data Speeds	(Upload only) 33,600 / 31,200 / 28,800 / 26,400 / 21,600 / 19,200 / 16,800 / 14,400 / 12,000 / 9,600 / 7,200 / 4,800 / 2,400 / 1,200 / 300
Data Standards	ITU V.90, ITU-T, V.34bis, V.22bis, V.22bis, V.21, V.23, Bell 212A, and Bell 103
Fax speeds	14,400 / 12,000 / 9,600 / 7,200 / 4,800 / 2,400 / 1,200 / 300 b/s
Fax mode capabilities	Group3 FAX, V. 17, V.29, V.27ter, and V.21 Channel 2, Class 1
Error Correction and Data Compression	V.44 (software upgradeable), 4.2bis, V.42 and MNP2-5
Power Management	APM and ACPI states D0, D1, D2, and D3; meets PCI 2.2 requirements and PC'99 requirements
Upgradability	Software driver upgradeable for v.92 and future enhancements
Video	ITU-T V.80 video ready interface
Other	TIA/EIA 602 standard AT command set
	Integrated DTE interface with speeds of up to 115.2 Kbps, parallel 16550a UART-compatible interface
	Optional ring wakeup signal
Operating temperature	32° to 104° F/0° to 40° C
Operating humidity	20% to 80%, non-condensing
Power	Requires a 3.3-V auxiliary power rail on PCI bus
	Uses only one PCI load (i.e., one grant/request pair), one shared IRQ, one electrical load
Chipset	Agere Systems 1648C (Mars 3.2)—Integrated PCI interface with 5-V tolerant buffers and CardBus support
Dimensions (L X H)	Complies with PCI low profile specifications—6.7 x 2.3 inches (17.0 x 5.8 cm) and supports high- and low-profile brackets
Connection	Dual, parallel RJ-11 support with auxiliary Tip/Ring connector
Other features	Digital line protection, call progress monitoring via on-board piezo device, transformer-based DAA design, support for high profile and low profile brackets, PnP ID supports via external EEPROM
Safety	UL recognized to UL 1950, 3rd edition (U.S. and Canada); IEC 950 (TUV, NEMKO, DEMKO, SEMKO); CE Mark, EC 950 (TUV, NEMKO, DEMKO, SEMKO, CE mark
EMC	FCC Part 15, IC ES003, EN 55022, 3rd edition, EN 55024, annex A, EN 61000-4-6, EN 61000-4-8
Telecom	FCC Part 68, IC-CS-03 (Canada); Worldwide PTT approvals
Health	Bare PCB material compliant to 94V-0 or better (marked as such), Microsoft Windows Me health compliant
Other	PC'99 compliant, PCI version 2.2, WHQL approved; support for ACPI revision 1.1

Technical Specifications – Graphics

Integrated NVIDIA GeForce4 MX 64-MB Graphics

3D/2D Controller	Integrated GeForce4 MX Graphics Processing Unit (GPU)
VGA Controller	Integrated
Bus Type	AGP8X for external graphics cards (Internal graphics is disabled if external AGP Graphics card is installed)
RAMDAC	Integrated 300-MHz DAC
Memory	Graphics memory is shared with system memory. Graphics memory usage can vary from 16 – 128MB depending on the amount of system memory installed and system BIOS settings.
Memory (Shared)	16-128MB DDR
Memory Bandwidth (Max Shared)	5.3 GB/second
Triangles/Second (Max)	24 million
Fill Rate (Max)	760 Million texels/second
Controller Clock Speed	200 MHz
Overlay Planes	Support is fully compliant with Microsoft standard API such as Direct Draw and Direct Show.
Max Color Depth	32-bits/pixel
Maximum Vertical Refresh Rate	85 Hz at 1920x1200, 75 Hz at 1920x1440, 60 Hz at 2048x1536
Multi-display Support	Yes. Two VGA ports integrated in system motherboard.
Operating Systems	Microsoft Windows XP and Windows 2000
Graphics API Support	Complete Microsoft DirectX® support, including DirectX 8.1; complete OpenGL® 1.3 support. Compatible with DirectX 9. NVIDIA Shading Rasterizer with 24 of 26 DX8 pixel shading functions and full set of OpenGL1.3 pixel combiner operations in hardware.

Resolutions Supported	**Resolution**	**Maximum Refresh Rate** (Hz)	**Resolution**	**Maximum Refresh Rate** (Hz)
	320 x 200	75	1280 x 1024	85
	320 x 240	75	1600 x 900	85
	400 x 300	75	1600 x 1200	85
	480 x 360	75	1920 x 1200	85
	512 x 384	75	1920 x 1440	75
	640 x 400	85	2048 x 1536	60
	640 x 480	85		
	800 x 600	85		
	1024 x 768	85		

Technical Specifications – Graphics

NVIDIA GeForce4 MX 440 Graphics Controller

3D/2D Controller	NV18 128-bit Graphics Processing Unit (GPU)
VGA Controller	Integrated
Bus Type	AGP8X
RAMDAC	350-MHz DAC
Memory	64-MB 128-bit DDR frame buffer memory
Controller Clock Speed	275 MHz
Overlay Planes	1
Stencil Planes	8-bit
Alpha Planes	8-bit
Z-buffer	32-bit
Total Bits/Pixel	32-bits/pixel
Maximum Vertical Refresh Rate	75 Hz at 2048 x 1536
Maximum Colors	32-bit color
Multi-display Support	Includes support for one CRT and TV simultaneously (VGA and S-Video connectors)
Operating Systems	Microsoft Windows XP and Windows 2000
Graphics API Support	Complete Microsoft DirectX® support, including DirectX 8.1; complete OpenGL® 1.3 support

Resolutions Supported	**Resolution**	**Maximum Refresh Rate** (Hz)	**Resolution**	**Maximum Refresh Rate** (Hz)
	320 x 200	75	1152 x 864	85
	320 x 240	75	1280 x 960	85
	400 x 300	75	1280 x 1024	85
	480 x 360	75	1600 x 900	85
	512 x 384	75	1600 x 1200	85
	640 x 400	85	1920 x 1080	85
	640 x 480	85	1920 x 1200	85
	800 x 600	85	1920 x 1440	75
	1024 x 768	85	2048 x 1536	60

Technical Specifications – Hard Drives

7200 rpm SMART III Ultra ATA/100 Hard Drives	**80-GB**	**Capacity**	80,000 MB	
		Rotational Speed	7200 rpm	
		Interface	Ultra ATA/100	
		Height	1 in/25.4 mm	
		Width	3.5 in/88.9 mm	
		Transfer Rate Synchronous (Maximum)	100 MB/s	
		Seek Time (typical reads, including settling)	Single Track	1.2 ms (2.7 ms quiet seek)
			Average	8 ms (10.1 ms quiet seek)
			Full-Stroke	18 ms (21.1 ms quiet seek)
		Physical Configuration	Logical Blocks	157,278,240
		Operating Temperature	41° to 131°F/5° to 55°C	
	40-GB	**Capacity**	40,000 MB	
		Rotational Speed	7200 rpm	
		Interface	Ultra ATA/100	
		Height	1 in/25.4 mm	
		Width	3.5 in/88.9 mm	
		Transfer Rate Synchronous (Maximum)	100 MB/s	
		Seek Time (typical reads, including settling)	Single Track	1.2 ms (2.7 ms quiet seek)
			Average	8 ms (10.1 ms quiet seek)
			Full-Stroke	18 ms (21.1 ms quiet seek)
		Physical Configuration	Logical Blocks	78,165,360
		Operating Temperature	41° to 131°F/5° to 55°C	
5400 rpm SMART III Ultra ATA/100 Hard Drives	**80-GB**	**Capacity**	80,000 MB	
		Rotational Speed	5400 rpm	
		Interface	Ultra ATA/100	
		Height	1 in/25.4 mm	
		Width	3.5 in/88.9 mm	
		Transfer Rate Synchronous (Maximum)	100 MB/s	
		Seek Time (typical reads, including settling)	Single Track	1.2 ms (2.7 ms quiet seek)
			Average	8 ms (10.1 ms quiet seek)
			Full-Stroke	18 ms (21.1 ms quiet seek)
		Physical Configuration	Logical Blocks	78,165,360
		Operating Temperature	41° to 131°F/5° to 55°C	
	40-GB	**Capacity**	40,000 MB	
		Rotational Speed	5400 rpm	
		Interface	Ultra ATA/100	
		Transfer Rate Synchronous (Maximum)	66 MB/s	
		Height	1 in/25.4 mm	
		Width	3.5 in/88.9 mm	
		Seek Time (typical reads, including settling)	Single Track	1.5 ms (2.9 ms quiet seek)
			Average	10.5 ms (12.4 ms quiet seek)
			Full-Stroke	23 ms (23 ms quiet seek)
		Physical Configuration	Logical Blocks	39,102,336
		Operating Temperature	41° to 131°F/5° to 55°C	

Technical Specifications – Input/Output Devices

Easy Access Keyboard (PS/2 or USB)	**Dimensions** (HxWxD)	1.4 x 18.3 x 6.3 in/36 x 465 x160 mm	
	Weight	Approximately 2 lbs/0.9 kg	
	Electrical	Operating Voltage	+5VDC ± 5%
		Power Consumption	50 mA maximum (with 3 LEDs on)
		System Interface	PS/2 mini-din connector
		ESD	CE level 4, 15 kV air discharge
		EMI-RFI	Conforms to FCC rules for a Class B computing device
		PC98	Functionally compliant
	Mechanical	Languages	30+ available
		Keycaps	Low-profile design
		Switch Actuation	55 g nominal peak force with tactile feedback
		Switch Life	20 million keystrokes (using Hasco modified tester)
		Switch Type	Contamination resistant membrane
		Key Leveling Mechanism	For all double wide and greater length keys
		Cable Length	6 ft/1.8 m
		PC98-99	Mechanically compliant
		Acoustics	50 dBA maximum sound pressure level
	Environmental	Operating Temperature	50° to 122° F/10° to 50° C
		Non-operating Temperature	–22° to 140° F/–30° to 60° C
		Operating Humidity	10% to 90% (non condensing at ambient)
		Non-operating Humidity	20% to 80% (non condensing at ambient)
		Operating Shock	40 g, 6 surfaces
		Non-operating Shock	80 g, 6 surfaces
		Operating Vibration	2 g peak acceleration
		Non-operating Vibration	4 g peak acceleration

Technical Specifications – Input/Output Devices

2-Button Scroll Mouse (PS/2 or USB)	**Scroll Wheel**	8 mm	
	Maximum Rotation Speed	30 mm/s	
	Switch Type	Light force micro-switch	
	Switch Life	1 million operations	
	Mechanical Life	Minimum 200,000 revolutions	
	Environmental	Operating Temperature	50° to 122° F/10° to 50° C
		Non-operating Temperature	–22° to 140° F/–30° to 60° C
		Operating Humidity	10% to 90% (non condensing at ambient)
		Non-operating Humidity	20% to 80% (non condensing at ambient)
		Operating Shock	40 g, 6 surfaces
		Non-operating Shock	80 g, 6 surfaces
		Operating Vibration	2 g peak acceleration
		Non-operating Vibration	4 g peak acceleration
	Electrical	Operating Voltage	+5VDC ± 10%
		Power Consumption	15mA
		System Consumption	PS/2 mini-din connector
		ESD	CE level 4, 15 kV air discharge
		EMI-RFI	Conforms to FCC rules for a Class B computing device
		PC98	Functionally compliant
	Mechanical	Resolution	400 ± 20% DPI
		Tracking Speed	10 in/s maximum
		Acceleration	100 in/s
		Switch Actuation	85 g nominal peak force
		Switch Life	1,000,000 operations (using Hasco modified tester)
		Cable Length	2 m
		PC98-99	Mechanically compliant
	Regulatory Approvals	UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BCIQ, C-Tick	

USB Optical Scroll Mouse	**Dimensions** (H x L x W)	1.5 x 4.5 x 2.5 in/3.8 x 11.6 x 6.3 cm
	Weight	0.27 lb/0.12 kg
	Cable length	72.8 in/185 cm
	System requirements	IBM-compatible PC Microsoft® Windows® 95, 98, 2000, Me, and XP Available USB port

Technical Specifications – Optical Storage

48X Max CD-ROM Drive	**Interface**	ATAPI IDE	
	Data Buffer	16.6 Mbps	
	Data Transfer Rate	Sustained—150 Kbps minimum	Variable (CD)—3,000 to 7,200 Kbps (audio)
	Disk Rotation Technology	CAV (Constant Angular Velocity)	
	Access Time (ms)	Random: <100 ms	Full-stroke seek: <150 ms
	Average Access Time	< 80 ms	
	Cache Buffer (standard/maximum)	128 KB	
	Disk Formats Read	Multi-session Photo CD, multi-read CD-ROM, CD text, audio CD, CD-I, CD-RW, CD-R, CD-Extra, CD-ROM XA	
	Disk Formats Written	None	
	Disk Capacity (CD)	650 MB	
	Block Size	Mode 1—2,048 bytes	
		Mode 2—2,340/2,336 bytes	
		CD-DA—2,352 bytes	
		CD-XA—2,328 bytes	
	Diameter	12 cm; 8 cm	
	Thickness	1.2 mm	
	Track Pitch	1.6 µm	
	Audio Output Level	Line-out—0.7 V @ 47 Kohm	Headphone—0.6 V @ 32 ohm
	Startup Time	<7 seconds (typical); < 30 seconds with multi-session	
	Operating Conditions	Temperature	41° to 113° F (5° to 45° C)
		Relative Humidity	10% to 80%
	Dimensions (H x W x D, maximum)	1.7 x 5.9 x 8.2 inches (4.3 x 15.0 x 20.8 cm)	
	Weight	2.6 lbs (1200 g)	
	Operating Systems Supported	Microsoft® Windows® NT 4.0, Microsoft Windows 2000, and Microsoft Windows XP.	
	MPEG Playback Graphics Solution Support	None	

48X/24X/48X CD-RW Drive	**Orientation**	Either horizontal or vertical	
	Disc Loading Mechanism	Half-height, tray load	
	Interface Type	ATAPI IDE	
	Dimensions—external (W x H x D)	7.99 x 5.88 x 1.71 in/203 x 149.5 x 43.5 mm	
	Weight	2.6 lb/1.2 kg	
	Disc Diameter	12 cm, 8 cm	
	Disc Thickness	1.2 mm	
	Track Pitch	1.6 µm	
	Disc Center Hole Diameter	15 mm	
	Reference Scanning Velocity	1.2 m/s	
	Recording/Playing Time	80 minutes with CD-R media	
	Read Only Disc Parameters	Formats and Modes Supported	CD-ROM—Mode 1; CD-ROM XA—Mode 2 (forms 1 and 2); CD digital audio; CD Extra; CD-I—Mode 2 (forms 1 and 2) and CD-I-Ready; Photo CD (single and multi-session); video CD
		Capacity	185 MB (Mode 2, 8cm); 540 MB (Mode 1, 12 cm); 650 MB (Mode 2, 12 cm); 700 MB (Mode 2, 12 cm)
		Block Size	Mode 1—2,048 and 2,352 bytes; mode 2, form 1—2,048; 2,328; 2,336; 2,340 and 2,352 bytes; mode 2, form 2—2,328; 2,336; 2,340 and 2,352 bytes; CD-DA—2,352 and 2,368 bytes
	Writeable Disc Parameters	Disc Type	CD-R and CD-RW
		Write Methods	Disc at Once, Track at Once, Session at Once, Variable Packet, Fixed Packet
		Format and Modes Supported	CD-ROM (mode 1); CD-ROM XA (mode 2, forms 1 and 2); CD digital audio, CD-I (mode 2, forms 1 and 2); video CD
		Capacity	185 MB (Mode 2, 8cm); 540 MB (Mode 1, 12 cm); 650 MB (Mode 2, 12 cm); 700 MB (Mode 2, 12 cm)
		Block Size	Mode 1—2,048 bytes; mode 2, form 1—2,048 and 2,352 bytes; mode 2, form 2—2,352 bytes; CD-DA —2,352 bytes
	Access Times (typical)	Random	< 120 ms
		Full Stroke	< 200 ms
	Data Transfer Rates	Sustained	CD-R write—1,800 KB/s (12X)
			CD-R write—2400 KB/s (16X)
			CD-RW write (1-4X media) —600 KB/s (4X)
			CD-RW write (4-10X media) —1,500 KB/s (10X)
			CD-RW write (4-12X media) —1,800 KB/s (12X)
			CD-RW read—3,600 KB/s (24X)
			Digital audio extraction (minimum) —7,200 KB/s (48X)
		Variable	CD-RW write—2,400 to 3,600 KB/s (16X to 24X)
			CD-RW write—2,400 to 4,800 KB/s (16X to 32X)
			CD-RW write—2,400 to 6,000 KB/s (16X to 40X)
			CD-RW write—2,400 to 7,200 KB/s (16X to 48X)
			CD-ROM, CD-R read—1,500 to 7,200 KB/s (10X to 48X)

48X/24X/48X CD-RW Drive *(continued)*	**Data Transfer Modes**	ATA PIO mode 4 (16.7MB/s) ; ATA multi-word DMA mode 2 (16.7 MB/s); ATA UltraDMA mode 0 (16.7 MB/s) ;ATA UltraDMA mode 1 (24 MB/s) ; ATA UltraDMA mode 2 (33 MB/s) – default.	
	Cache Buffer	2 MB (minimum)	
	Start-up Time (single)	< 7 seconds typical	
	Start-up Time (multi-session)	< 30 seconds typical	
	Stop Time	< 4 seconds	
	Power	Source	Four-pin, DC power receptacle
		DC power requirement	5 VDC ± 5%—100 mV ripple p-p
			12 VDC ± 5%—200 mV ripple p-p
		DC current	5 VCD < 1A (typical)
			< 1200 mA (maximum)
			12 VCD < 600 mA (typical)
			< 1.2A (maximum)
			Total Drive Power (Standby mode) < 2.5 watt
	Audio Output Level	0.7 Vrms	
	Configuration Jumper Block	Master, slave and cable select modes	
	Data Interface Connector	50-pin IDE interface	
	Environmental (all conditions, non-condensing)	Temperature (operating)	Operating 41° to 122° F (5° to 50° C)
		Relative Humidity (operating)	10% to 85%
		Maximum Wet Bulb Temperature (operating)	84° F (29° C)

Technical Specifications – Optical Storage

16X/40X DVD-ROM with +R Read Drive

Height	5.25-in, half-height	
Interface Type	ATAPI	
Dimensions– External, Excluding Bezel (W x H)	5.88 x 1.71 in (149.5 x 43.5 mm)	
Disc Diameter	12 cm, 8 cm	
Disc Thickness	1.2 mm	
Track Pitch	1.6 µm (CD), 0.74 µm (DVD)	
Disc Center Hole Diameter	15 mm	
Disc Formats	DVD-ROM (single and dual layer); DVD-video; DVD-R version 1.0 and 2.0; DVD-RW version 1.0 and 1.1; DVD-R multi-border; DVD+RW; DVD+R ; CD-ROM Mode 1 and 2; CD-DA; CD-ROM XA Mode 2, Form 1 and 2; CD-extra; CD-text; CD-I Mode 2, Form 1 and 2; CD-I ready; video CD, CD-bridge; PhotoCD (single and multi-session); CD-R; CD-RW	
Disc Capacity	DVD-ROM	4.7 GB (DVD-5), 8.54 GB (DVD-9), 9.4 GB (DVD-10), 3.95 GB (DVD-R version 1.0), 4.7 GB (DVD-R version 2.0), 4.7 GB (DVD-RW version 1.0 and 1.1), 4.7 GB (DVD+RW), 4.7G (DVD+R)
	CD-ROM	540 MB (Mode 1, 12 cm), 640 MB (Mode 2, 12 cm), 700 MB (80 minimum CD-R and CD-RW), 180 MB (8 cm)
Block Size (bytes)	DVD-ROM – 2048; CD-ROM Mode 0 – 2352; CD-ROM Mode 1 – 2352, 2340, 2336, 2048; CD-ROM Mode 2 – 2352, 2340, 2336, 2048	
Access Times (typical reads, including settling)	DVD-ROM Single Layer	< 120 ms
	CD-ROM Mode 1	< 90 ms
	Full Stroke DVD	< 240 ms (seek)
	Full Stroke CD	< 160 ms (seek)
Data Transfer Rates	2600 – 6000 KB/s (40X CAV CD-ROM mode)	
	8100 – 21,600 KB/s (16X CAV DVD-ROM mode)	
Data Transfer Modes	PIO Mode 4 (16.6 MB/s); Multi-word DMA mode 2 (16.6 MB/s); UltraDMA Mode 3 (44.4 MB/s)	
Power	Source	Four-pin, DC power receptacle
	DC Power Requirement	5 VDC ± 5% – 100 mV ripple p-p
		12 VDC ± 5% – 200 mV ripple p-p
	DC Current	5 VDC – <800 mA typical, < 1000 mA maximum
		12 VDC – < 870 mA typical
Audio Output Level	0.7 Vrms (typical)	
Configuration Jumper Block	Master, slave, and cable select modes	
Data Interface Connector	40-pin, shrouded and keyed, flat ribbon	
Environmental (all conditions non-condensing)	Temperature (operating)	41° to 122° F (5° to 50° C)
	Relative Humidity (operating)	10% to 85%
	Maximum Wet Bulb Temperature (operating)	86° F (30° C)
Certifications, Approvals	MMC II support, multi-read certification, Microsoft WHQL certification, ACA AS/NZS 3548 class B, CNS 13438, C.I.S.P.R. Pub 22, TUV or VDE EN60950, EN 55022, EN55024, SEMKO, NEMKO, DEMKO, FIMKO, EN 60825-1, UL 60950, and CSA C22.2 60950-2000.	
Operating Systems Supported	Microsoft Windows NT, Microsoft Windows 2000, and Microsoft Windows XP.	

Technical Specifications – Removable Storage

1.44-MB Diskette Drive	**LED Indicators** (front panel)	3.5 in.	
	Read/Write Capacity per diskette (high/low density)	Green	
	Drive Supported	1.44 MB/720 KB	
	Drive Height	One	
	Drive Rotation	One-third	
	Transfer Rate (high/low)	300 rpm	
	Bytes/Sector	500/250 Kb/s	
	Sectors/Track (high/low)	512	
	Tracks/Side (high/low)	18/9	
	Access Times	80/80	
		Track-to-Track (high/low)	3/6 ms
		Average (high/low)	169/94 ms
		Settling Time	15 ms
		Latency Average	100 ms
USB Drive Key	**Dimensions** (HxWxD)	0.9 x 0.6 x 3.2 inches(2.3 x 1.5 x 8.2 cm)	
	Weight	0.05 lb (0.02 kg)	
	USB Specification	1.1	
	Transfer Rate	Read-1023 KB/Sec; Write-850 KB/Sec	
	Storage Media	Solid state flash memory, no moving parts	
	Power Supply	USB Bus-powered, no external power required	
	Capacity	64MB and 128MB	
Zip 250 Drive	**Interface**	ATAPI IDE	
	Media format supported	Zip disk	
	Media capacity	250 MB	
	Access time	29 ms (average)	
	Drive rotational speed	2,941 rpm	
	Size	Fits into a 5.25-inch bay (with bracket)	
	Data transfer rate	Maximum sustained	2.4 Mbps
			1.4 Mbps
			1.4 Mbps (100 MB), 2.4 MB/s (250 MB)
			0.3 Mbps (100 MB), 2.4 MB/s (250 MB)
			11.1 Mbps
	Operating conditions	Temperature	50° to 125° F (10° to 51.5° C)
		Humidity	20% to 80%
	Compatible operating system	Microsoft Windows 2000 and Windows NT 4.0	

HP recommends Microsoft® Windows® XP Professional for Business

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